Jean Mantz, M.D., Ph.D., Editor

Perioperative Medicine

Association of perioperative beta-blockade with mortality and cardiovascular morbidity following major noncardiac surgery. JAMA 2013; 309:1704–13

The risk:benefit ratio of perioperative β-blockade in intermediate-risk patients undergoing major noncardiac surgery remains a matter of debate. This retrospective cohort study examined all-cause 30-day mortality and cardiac morbidity (cardiac arrest or Q-wave myocardial infarction) in patients exposed to β-blockade on the day after major noncardiac surgery who were matched 1:1 on propensity scores with patients in 104 medical centers. Perioperative β-blocker exposure was associated with lower overall 30-day all-cause mortality. When stratified by cumulative numbers of Revised Cardiac Risk Index factors, β-blocker exposure resulted in lower mortality and cardiovascular morbidity in patients with 2 or more Revised Cardiac Risk Index factors undergoing nonvascular surgery (table 1). These observational findings support the use of a cumulative number of revised Cardiac Risk Index in deciding whether to use perioperative β-blockers in noncardiac surgical patients, but need confirmation in a randomized controlled trial.

Table 1. Mortality and Morbidity in Propensity-matched Pairs of Patients for β-blocker Exposure on the Day or after Major Noncardiac Surgery

	30-day Mortality	Cardiac Morbidity
Exposure to β-blockers (overall incidence [95% CI]), %	1.1	0.90
Exposure to β-blockers and RCRI ≥2, nonvascular surgery, relative risk (95% CI)	RCRI = 2: 0.63 (0.50–0.80) RCRI = 3: 0.54 (0.39–0.73) RCRI = 4: 0.40 (0.25–0.73)	0.67 (0.57–0.79)

RCRI = Revised Cardiac Risk Index.

Discontinuation of statins in routine care settings. Ann Intern Med 2013; 158:526–34

Hypercholesterolemia is a most common chronic condition associated with cardiovascular mortality. Chronic statin therapy improves the outcome of patients at risk for developing major cardiovascular adverse event, but the impact of statin discontinuation has received little attention. This retrospective cohort study including more than 100,000 patients shows that the large majority of patients in whom statin therapy was discontinued for suspicion of a statin-related adverse event could well tolerate reintroduction of this medication for another 12-month period. Although it contains methodologic limitations inherent to the retrospective nature of the work, this study suggests that the so-called statin-related adverse events may have other causes and should not prompt to automatic cessation of chronic statin therapy in patients with hypercholesterolemia.

Multicenter analysis of risk factors for anastomotic leakage after laparoscopic rectal cancer excision. Ann Surg 2013; 257:665–71

Laparoscopy has become a standard of care for surgical treatment of rectal cancer. This retrospective cohort study examined the risk factors for anastomotic leakage after laparoscopic rectal cancer excision in 1,609 patients from 11 institutions. In multivariate analysis, predictors of postoperative anastomotic leakage were male sex, low anastomosis, preoperative chemoradiation, advanced tumor stage, perioperative bleeding, and multiple firing of the linear stapler. These data may help to optimize patient care, both by discussing the usefulness of a protective stoma and detecting earlier postoperative anastomotic leakage.

Effect of longer term modest salt reduction on blood pressure: Cochrane systematic review and meta-analysis of randomized trials. BMJ 2013; 346:f1325

This study included 34 randomized controlled trials (3,230 participants) with modest reduction in salt intake during at least 4 weeks. It was shown that even a modest reduction in salt intake was pretty efficient in significantly reducing blood pressure in both hypertensive and normotensive individuals, irrespective of sex and ethnic group (table 2). Salt reduction was associated with a small increase in plasma renin, aldosterone, and norepinephrine, and no change in lipid levels. The current recommendation to reduce daily salt intake from 9–12 to 5–6 g is expected to induce a major effect on blood pressure, but further reduction will have still a greater effect and should be targeted to reduce cardiovascular disease in the general population.

Table 2. Changes in Systolic Blood Pressure (mmHg, 95% CI) Induced by a Reduction in the Daily Salt Intake According to the Study Criteria

Hypertensive Patients	Normotensive Patients
–5.39 (–6.62 to –4.15)	–4.18 (–5.18 to –3.18)

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Critical Care Medicine

Mortality after hospital discharge in ICU patients. Crit Care Med 2013; 41:1229–36

In the years to come, anesthesiologists are expected to take more responsibilities for the perioperative care of surgical patients. Regulatory agencies have used indicators, such as intensive care unit (ICU)/hospital stay and mortality, to evaluate the costs and compare the quality of care delivered by academic and private hospitals. However, mortality of ICU patients after discharge from the hospital may be more important than in-hospital mortality, although the data are difficult to obtain. Thus, to answer this critical question, Dutch critical care physicians conducted a study examining ICU admissions (81 ICU units) from a national ICU registry to assess the mortality risk of ICU patients after hospital discharge and to compare it with mortality of the general Dutch population. The study included ICU patients (n = 91,203) who were discharged alive from the hospital between January 1, 2007 and October 1, 2010. The results showed that the mortality risk at 1, 2, and 3 yr after hospital discharge was 12.5, 19.3, and 27.5%, respectively. The 3-yr mortality after hospital discharge in ICU patients was higher than the weighted average of the sex- and age-specific death risks of the general Dutch population (27.5 *vs.* 8.2%). The authors concluded that in-hospital mortality underestimates the true mortality of ICU patients, as the mortality in the first months after hospital discharge was substantial. However, the mortality after hospital discharge differs widely between ICU subgroups. Age, reason for ICU admission, and comorbidities were associated with all long-term mortality endpoints although the magnitude and direction of the influence by these determinants differed for the different endpoints (*i.e.*, 3, 6, and 12 months after hospital discharge). Future studies should thus focus on the analysis of mortality after hospital discharge that is attributable to the former ICU admission.

(*Suggested by Jean-François Pittet.*)

Natriuretic peptide-driven fluid management during ventilator weaning: A randomized controlled trial. Am J Resp Crit Care Med 2012; 186:1256–63

Weaning from the ventilator is a difficult challenge in ICU patients with poor left ventricular function. Several lines of evidence suggest that natriuretic peptides help to predict and diagnose weaning failure of cardiac origin, which increases morbid-mortality *via* prolongation of duration of mechanical ventilation. In this randomized controlled multicenter prospective trial including 304 patients, it was shown that a natriuretic peptide–driven strategy was superior to a physician-driven strategy to accelerate weaning from the ventilator, the primary judgment criterion being successful extubation (table 3). This strategy was associated with an increased diuretic use and a more negative fluid balance, especially in patients with impaired left ventricular systolic function.

Table 3. Time to Successful Extubation (Primary Judgment Criterion) and Fluid Balance in the Two Groups

	Natriuretic Peptide–driven Weaning Protocol	Physician-driven Weaning Protocol
Time to successful extubation, h	42.4 [20.8–107.5]*	58.6 [23–139.8]
Fluid balance, ml	−2,320 [−4,735 to 738]	−180 [−2,556 to 2,832]#

Data are median [interquartile range].
*$P = 0.034$; #$P < 0.0001$.

Pain Medicine

Patients given fungus tainted injections continue to face uncertainty, illness. JAMA 2013, 309:1669–70

In the fall of 2012, it was not just pain management practitioners but the general public as well that learned of a serious problem concerning contaminated steroids supplied by the New England Compounding Center in Framingham, Massachusetts. It was evident early on that unusual fungal infections caused by these preparations could be deadly. The scope of the catastrophe was unparalleled in the history of interventional pain medicine; a complication generally reported at the case report level had become an immediate concern for physicians and patients alike. Unfortunately, the problem is not over.

In her article, Bridget Kuehn discusses our current understanding of these fungal infections with Dr. Tom Chiller of the Centers for Disease Control and Prevention. The article cites evidence that more than 14,000 patients were exposed to the contaminated medication, that over 700 infections have resulted, and that there have been at least 50 deaths. Even if patients survive the infections, they may suffer from permanent neurological disorders, arachnoiditis, or other problems. Of particular concern, some of these infections only became clinically apparent 6 months or more from the time of injection, and it is possible that indolent infections may not clinically emerge until a year or more after the exposure. However, deciding on when to treat, which antifungal drug to select, and for how long the drug should be administered are not trivial matters. Consensus on these issues has not been reached. One of the most commonly used treatments, voriconazole, is not only, particularly likely, cause visual disturbances, but also hallucinations, fever, nausea,

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and rashes. Treatment is often maintained for 3–6 months, but this period of treatment may be lengthened in some patients. The article makes the clear case that we need to remain vigilant for evidence of epidural or meningeal infection in patients potentially exposed to contaminated steroid injections.

(*Suggested by David Clark.*)

Education

A new partnership for anesthesia training in Zambia: Reflections on the first year. Can J Anesth 2013; 60:484–91

"A new partnership for anesthesia training in Zambia: reflections on the first year" is a special article in the *Canadian Journal of Anaesthesia* that describes experiences in developing and implementing an anesthesia patient care education program in a geographic location with limited resources (equipment and personnel) to support such an endeavor. The authors' intent is to raise the level of awareness of anesthesiology educators to the successes and challenges of a collaborative educational activity between a first and a third world country.

The relatively easy portion of starting the anesthesiology education program was establishing the needs assessment and defining an appropriate curriculum. More difficult issues that were often quite local in nature, *i.e.*, issues that arose from customs of the onsite geographic location, included: (1) "…factors central to modern anesthesia practice [that] are either underdeveloped or absent, including advocacy, risk management, patient safety, informed consent, and patient autonomy, which frequently gave rise to moral and ethical dilemmas" and (2) the realization that, "Despite the best intentions of visiting faculty, there is no doubt that their presence is an intrusion on normal practices locally… Several episodes of conflict occurred between visiting faculty and local surgeons because the surgeons were unaccustomed to being challenged by anesthesia staff."

The authors highlight the fact that these difficulties guided the program sponsors to learn lessons for correction and guides for future educational program development. A prime example is the recognition that involvement of the local surgeons before as well as during the implementation of the new anesthesiology education program would have avoided and defused conflicts between the physician specialty groups. Another major personnel problem that was identified during the initiation of the new anesthesiology education program centered on the diverging qualifications between the existing anesthesia patient care work force and the newly educated practitioners.

This article makes it obvious that anesthesiology content (cognitive) aspects of education were relatively easy to identify and solve, whereas process (affective) aspects of the education and interpersonal relationship friction were much more difficult. Review of this article provides anesthesiology educators much fodder to digest when contemplating development and implementation of educational programs for all types of learners.

(*Suggested by Alan Jay Schwartz.*)

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